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"Revolutionizing Hair Care: Formulation and Development of Charcoal-Infused Poly Herbal Hair Dye Bar"

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ABSTRACT:

The study explores the effectiveness of a herbal hair dye infused with charcoal as a natural alternative to synthetic dyes. The formulation, featuring charcoal and various herbal extracts, aimed to provide permanent hair coloring without causing damage, hair loss, or skin irritation compared to synthetic and semi-synthetic dyes. The experiments conducted evaluated the dye formulation ability to impart color rinsability and stability The results indicate promising outcomes, suggesting that this charcoal-infused herbal hair dye bar could be a safe eco-friendly aesthetically pleasing option for those seeking natural hair coloring alternatives.

Key words: Henna, Reetha, Amla, Shikakai, Bhringraj, and Tea powder, Charcoal powder, Dry curry leaves Bringraj powder, Moringa powder, Vitamin E, Soap base, Alovera gel

Introduction:

Hair dye is a widely adopted cosmetic practice, embraced by millions of individuals across genders. Its application is not limited to professionals, as many now prefer to color their hair at home. Understanding the structure of hair is essential; it comprises roots and shafts, with the shaft having three layers. The Cuticle, consisting of tightly packed colorless cells; the cortex, containing natural pigments determining hair color, and the medulla, which has a hollow core.

Cosmetic hair dye products are specifically designed for coloring hair. Initially intended to conceal gray hair in women, these products have gained popularity among men. Today, the market offers various hair dye products exclusively crafted for men. The motivations for using these products have evolved beyond concealing gray hair, now extending to enhancing natural hair color or undergoing a complete transformation. In any case, the driving factors remain fashion trends and the desire to feel more attractive.

Hair dye products can be broadly categorized based on their duration in the hair, namely temporary and permanent. Further subdivisions include temporary and semi-permanent, as well as permanent and demi-permanent hair dye products. This classification aligns with the type of active ingredients involved in the dyeing process, categorized as non-oxidative and oxidative hair dye products.

Understanding the distinctions in these products is essential. The choice between temporary and permanent options depends on individual preferences and the desired longevity of the hair color. Additionally, the classification into non-oxidative and oxidative products is based on the type of dyeing process and the active ingredients employed. This insight into the different categories and processes contributes to making informed decisions about hair dye selection, ensuring that individuals achieve the desired look effectively. The formulation, featuring charcoal and various herbal extracts, aimed to provide permanent hair coloring without causing damage, hair loss, or skin irritation compared to synthetic and semi-synthetic dyes. [(1)]

Method of preparation of POLYHERBAL CHARCOAL INFUSED HAIR DYE BAR

S.NO	INGREDIENTS	FORMULATION-1	FORMULATION-2	FORMULATION-3	USES
1	Amla powder	10 gm	10gm	10gm	Promote hair growth, slow down aging of the hair
2	Shikakai powder	10gm	10gm	10gm	Good cleanser and anti-dandruff
3	Reetha powder	10gm	10gm	10gm	Promotion of hair growth, reduce dandruff, Hair cleanser
4	Coffee powder	1gm	--	--	Promote hair growth, detoxify scalp
5	Tea powder	1 gm	--	---	Long has hair colourant
6	Charcoal powder	0gm	10gm	10gm	Detoxifies, exfoliate
7	Dry curry leaves	10gm	10gm	10gm	Good hair Growth
8	Bringraj powder	10gm	10gm	10gm	Increase hair growth
9	Moringa powder	10gm	10gm	10gm	Give healthy hair, Detoxification
10	Vitamin E	1 gm	1 gm	1 gm	antioxidant properties
11	Soap base	40gm	50 gm	50 gm	Solidifying agent
12	Coconut oil	--	---	3 ml	It is used to relieve dandruff, restore luster to dry and

					damaged hair
13	Alovera gel	1 gm	1 gm	1 gm	Natural mordant, Promote Hair Growth
	Total weight of soap	124gm	124gm	124gm	

METHODOLOGY:

Preparation of Poly Herbal Hair Dye Bar by Double Boiling Fusion:

The process for preparing herbal hair dye, considering the weighing of ingredients and heat treatment, is outlined as follows:

- Weighed all the selected herbal ingredients such as Henna, Reetha, Amla, Shikakai, Bhringraj, and Tea powder. Heated the powdered substance until it turned into a black color, taking approximately 4-5 minutes based on formulation trials.
- Mixed black powder mixture: Set aside a mixture of the black powder and incorporated Reetha powder and Shikakai powder, ensuring a uniform blend.
- Particle size uniformity: Passed the homogeneous powder mixture through a #120 mesh to achieve a consistent particle size
- Melted soap base and coconut oil: Melt the required quantity of soap base and coconut oil in double boiling method.
- Combining and mixing: Combined the melted soap base with the powdered mixture
- THOROUGH MIXING: Continued the mixing process until the ingredients are blended thoroughly throughout the preparation.
- Transfer to the moulds: Transferred the blended mixture into grease-lined soap moulds.

Charcoal Preparation Process by Igniting and Smoking:

1. Began the process by placing the copper vessel securely on the tripod stand, positioning it at the top of the burner, and then ignited the burner.

2. Plate chosen was slightly taller than the burner to ensure optimal effectiveness in the charcoal preparation process.

3. While observing the setup from a lying-down position, it was noticed that the flames engaging with the copper plate, gradually caused it to darken. This transformation was a result of the deposition of soot on the surface.

4. To facilitate the collection of soot, employed a spatula or knife to periodically scrape off the accumulated residue from the copper plate. This step was essential to maintain the efficiency of the process.

5. The black residue obtained through this process was precisely what we identified as charcoal. This method of charcoal production was known for its simplicity and effectiveness.

6. Continued the burning process until gathered a satisfactory quantity of soot. The duration of burning varied based on the desired volume of charcoal needed.

7 Collected sample amount of soot, handled it with care as it was removed from the plate. Stored the gathered charcoal in a sealed container to preserve its quality and prevent contamination.

***Evaluation test for herbal hair dye :**

The prepared herbal hair dye was evaluated for various parameters such as organoleptic,

Physico- chemical, and retentivity and irritation test

1) Organoleptic evaluation :

Organoleptic characteristics for various sensory characters like colour, odour, taste etc. was carefully noted down as illustered in Table 1 The raw drugs and powders were separately studied by organoleptic and morphological characters like colour, odour, texture and appearance.

Parameters	Results
Colour	Black
Texture	Smooth
Appearance	Solid bar
Odour	Aromatic

2)Physicochrmical evaluation :

The physical and chemical features of the herbal dye were evaluated to determine the ph , moisture content and stability.

Sl no	Parameters	Results
1	Ph	6.5
2	Loss of drying	1.7%
3	Ash value	0.17

3)Stability test :

Stability testing of the prepared formulation was performed by storing it at different conditions

Sl no	Parameters	Room temperature	35c
1	Colour	No change	No change
2	Odour	No change	No change
3	Ph	6.5	6.5
4	Texture	Fine	Fine
5	Smoothness	Smooth	Smooth

4)Retentivity and irritation test :

The retentivity and irritation test for herbal hair dye typically involves assessing how well the dye colour adheres to the hair over time (retentivity) and whether it causes any skin irritation. This test helps determine the effectiveness and safety of the product. It involves applying the dye to a small area of the skin to check for any adverse reactions, and then monitoring the colour retention on a strand of hair over a specified period. These tests are crucial for ensuring the product's quality and consumer safety.

Sl no	Parameters	Results
1	Swelling	Negative
2	Redness	Negative
3	Irritation	Negative
4	Retention	Positive

CONCLUSION AND DISCUSSION:

The herbal-based hair dye has been carefully crafted to offer a gentle and natural alternative for coloring hair. Its key advantage lies in its non-toxic nature, which not only provides a safe coloring option but also effectively addresses dandruff concerns by removing excess oil from the scalp.

The herbal formulation hair pack incorporates a blend of plant powders known for their outstanding hair care properties. The increasing preference for natural remedies is driven by their safety and minimal side effects in comparison to chemical-based products. Our research underscores the effective properties of this herbal hair dye, emphasizing its role not only in cosmetic coloring but also in promoting scalp health.

In contemporary times, natural medicines are widely recognized for their safety profile and reduced adverse effects, contrasting with the potential drawbacks of chemical-based solutions. The surge in demand for herbal formulations reflects the growing awareness and preference for safer alternatives, meeting the needs of an expanding global market. The research also emphasizes the environmental impact, highlighting the sustainability of the charcoal-based formulation compared to conventional dyes. One of the notable advantage highlighted in the study is the convenience of the ready-to-use charcoal-infused herbal hair dye with good rinsability, addressing issues faced by products containing crude plant powders that require processing prior to use[(2)].

The creation of an herbal hair pack, integrating the benefits of plant powders renowned for their hair care properties, represents a significant step towards providing a holistic and effective solution for individuals seeking a natural approach to hair coloring and maintenance.

Reference:

1.Nilani Packianathan&Saravanan Karumbayaram, Formulation and Evaluation of Herbal Hair Dye: An Ecofriendly Process, Nilani Packianathan et al, /J. Pharm. Sci. & Res. Vol.2 (10), 2010,648-656,E-ISSN: 2278-4136,P-ISSN: 2349-8234

2. Laxmi N Jamagondi, Aniket S Katte, Manmat B Rumane, Naushad NMirza, Sagar S Sontakke, Akshay R Kale and Mahewash A Pathan , Development and evaluation of herbal hair dyeformulation , Journal of Pharmacognosy and Phytochemistry 2019; 8(2): 1363-1365E-ISSN: 2278-4136 ,P-ISSN: 2349-8234

3. Miss. Mane Ashwini Ganpat,Prof.Aswar A.R.,Dr. HINGANE L.D. Formulation and Evaluation of Herbal Hair Dye, © 2021 IJCRT | Volume 9, Issue 12 December 2021 | ISSN: 2320-2882

4. Ujwal Havelikar, Arindam Kolay, Sunita Kularia, Rashmi Dorai, Renulata, Formulation and Evaluation of Herbal Plants Based Herbal Hair Dye, May 2023 DOI:10.37896/JBSV23.5/2134 , Journal For Basic Sciences, ISSN NO : 1006-8341

5. Patel Avani Dipakbhaiand Rajvi J. Mahida, Review of Natural Resources used to Hair Dye and HairCare Products, Patel Avani Dipakbhai et al /J. Pharm. Sci. & Res. Vol. 13(9), 2021, 546-552, ISSN NO: 0975-1459

6. Ganesh Sarkate1, Akansha Sarode, Omkar Selmokar, Prof. Poonam Harpale ,Dr . Rajesh Oswal, Formulation and Evaluation of Herbal Hair Dye, Volume 7, Issue 8, August – 2022,International Journal of Innovative Science and Research TechnologyISSN No:-2456-2165

7. Textbook of cosmetics formulations , authors Gaurav Kumar Sharma ,Jayesh gadiya ,Meenakshi dhanawath .

8.Textbooks of cosmetic science , author Dr. L. V. Vigneshwaran